Active arcing fault protection system for dry-type transformers

When an arcing fault occurs in an electrical installation, a very hot plasma is created which causes strong pressure built-up and very high temperature in the affected area. Arcing faults can be caused by incorrect dimensioning and reductions in insulation due to contamination etc., but they can also be the result of handling errors like leftover of tools after service and maintenance work.

An arcing fault can have fatal consequences for the operator and strongly damage the system and even the building. To effectively prevent from such consequences, ABB recommends the use of an active arcing fault protection system which has already proven to be successful in switchgears. Reliable protection of people and property with the Ultra-Fast Earthing Switch (UFESTM) is now also available for dry-type transformers.

**Important advantages of the arcing fault protection system**
- Greatly enhanced protection of people
- Far higher availability of systems and processes for the greatest possible competitiveness
- Drastically reduced repair costs through minimum impact of faults on the system: transformer and enclosure can be reused in the event of a fault; only the UFES unit needs to be replaced
- Use of energy-efficient cooling solutions in combination with enclosures independent of the IP-class
- Certified by IAC BFLR test (PEHLA)

The UFES is a combination of devices consisting of an electronic device and the corresponding primary switching elements which initiate a 3-phase short-circuit to earth in the event of a fault. The extremely short switching time of the primary switching element in conjunction with the rapid and reliable detection of the fault, ensures that an arc fault is extinguished almost immediately after it arises (extinguishing time < 4 ms after detection). With this passive protection enhancement it is possible to achieve the highest possible safety for people and property.
Delivery options for the arcing fault protection system

- **New transformer with integrated UFES**
  For a new ABB dry-type transformer, it makes sense to add an UFES in order not only to protect the investment from the effects of an arcing fault but also to increase personal safety to a maximum. A service kit is available for mounting on the transformer enclosure.

- **Retrofitting of existing ABB dry-type transformers:**
  - **ABB Service Box (up to 24 kV)**
    The universal ABB UFES Service Box for subsequent upgrading of ABB transformers with a protective enclosure. This provides the highest flexibility of installation for adapting to the given space and system-specific conditions.
  - **ABB Service Withdrawable Unit Solutions**
    UFES primary switching elements installed in ABB withdrawable units/truck-type switchgears offer a simple means of upgrading existing switchboards with active arcing fault protection, e.g. for transformers
    - Contact to the busbars is made via the contact clusters of the withdrawable truck
    - Optimum plug&play solution for unequipped panels
    - Similar solutions are also possible for other switchboard types with truck-type switchgear

**Protection for the highest requirements**

The arcing fault protection system for dry-type transformers is available for rated voltage up to 40.5 kV \( (I_f \text{ max. } 40 \text{ kA} / 3 \text{ s}) \) and rated short-circuit current of up to 63 kA \( (U_r \text{ max. } 17.5 \text{ kV}) \).

For more information please contact:

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